BALANDIN, D. A.

"Review of Ya. I. Fialkov's book 'Methods of Studying Medicinal Substances',"
Med. Prom., SSSR, No 2, 1949

APPROVED FOR RELEASE: Wednesday, June 21, 2000 CIA-RDP86-00513R000103

BALANDIN, D. A.

20083 BALANDIN, D. A. Zameniteli insulina pri zakharnom diabete. Vracheb. delo, 1949, No. 6, stb. 547-48.

SO: LETOPIS ZHURNAL STATEY, Vol. 27, Moskva, 1949.

BALANDIN, D. A.

Gingseng. Feldsher & akush. no.8:46-48 Aug. 1950. (CLML 20:1)

APPROVED FOR RELEASE: Wednesday, June 21, 2000 CIA-RDP86-00513R000103

1. BALANDIN, D. A.

2. USSR (600)

4. Ginseng

7. Tincture of the ginseng root. Apt. delo no. 5, 1952.

9. Monthly List of Russian Accessions, Library of Congress, January, 1953. Unclassified.

BALANDIN, D.A.

Conference on ginseng. Apt.delo 3 no.2:63 Mr-Ap '54. (MLRA 7:4)
(Ginseng)

BALANDIN, D.A.

Bibliographic sources on ginseng. Apt. delo 3 no.4:59-60 Jl-Ag '54.
(PLANTS, (MLRA 7:8)
*ginseng, review)

APPROVED FOR RELEASE: Wednesday, June 21, 2000 CIA-RDP86-00513R000103

Alterations of ginseng preparations during storage. [illegible]

A. [illegible]

BALANDIN, D.A.

Chemical composition of ginseng; survey of literature.
Mat. k izuch. zhen'-shenia i lim. no.2:77-96 '55. (MLRA 9:10)

(GINSENG)

CHERNIY, V.F.; BALANDIN, D.A.

"9-1," a ginseng preparation. Soob.Prim.otd.VKHO no.3:145-151 '57. (MIRA 13:6)

1. Dal'nevostochnyy filial im. V.L.Komarova Akademii nauk SSSR.

(Ginseng)

APPROVED FOR RELEASE: Wednesday, June 21, 2000 CIA-RDP86-00513R000103

USSR / Cultivated Plants. Medicinal Plants. Essential- M
Oil Plants. Poisonous Plants.

Ref Zhur - Biologiya, No 6, 1959, No. 25105

Author : Balandin, D. A.; Chernyy, V. F.
Inst : Far-Eastern Branch AS USSR
Title : Ginseng Extracts

Orig Pub : Soobshch. Dal'nevost. fil. AN SSSR, 1958, vyp 9, 99-108

Abstract : Investigations of the Far-Eastern Branch AS USSR indicated that the number of extractive substances in ginseng is not constant and depends not only upon the root's part but also upon the method of extraction and the size of the specimens' grind. Water (up to 50%) and 20% ethyl

Card 1/3

USSR / Cultivated Plants. Medicinal Plants. Essential- Oil Plants. Poisonous Plants. M

Abs Jour : Ref Zhur - Biologiya, No 6, 1959, No. 25105

alcohol (up to 56%) are used mostly to isolate the extractive substances. For hydroxyl-containing solvents, the larger the radical the smaller is the solubility. Extraction by heat causes hydrolysis of unstable compounds. Wild-growing ginseng contains considerably more substances dissolved by ethyl alcohol (31%) than the slightly changed Korean white ginseng. In the Korean white ginseng during extraction by heat, the smaller the concentration of ethyl alcohol, the greater is the yield of the extractive substances. The quantity of extractive substances, isolated from the

Card 2/3

USSR / Cultivated Plants. Medicinal Plants. Essential- M
Oil Plants. Poisonous Plants.

Abs Jour : Ref Zhur - Biologiya, No 6, 1959, No. 25105

Korean red ginseng, depends upon the solvent's polarity: the greater its polarity, the larger is the yield of the extractive substances. -- I. K. Fortunatov

Card 3/3

APPROVED FOR RELEASE: Wednesday, June 21, 2000 CIA-RDP86-00513R000103

BALANDIN, G. A.

Balandin, G. A. "Rapid and progressive methodology in milk research on undulant fever," Trudy (Rost. n/D gos. nauch.-issled. protivochum. in-t), Vol. VII, 1948, p. 81-88 - Bibliog: 18 items.

SO: U-2888, Lepitos Zmurnal'nykh Statey, No. 1, 1949

BALANDIN, G.A.

Problem of natural foci in brucellosis. Zh. mikrobiol., Moskva No.1:14-17 January 1954. (CIML 25:5)

1. Of Rostov State Scientific-Research Institute (Director -- A.I. Shishkin), Ministry of Public Health USSR.

USSR/Pharmacology. Toxicology. Chemotherapeutical Preparations V

Abs Jour : Ref Zhur-Biol., No 8, 1958, 37680

Author : Balandin G. A. Prostetova N. P.

Inst : Rostov na Donu State Scientific-Research Intiplahue Institute

Title : On the Problem of the Mechanism of the Therapeutic Effect of Syntomycin and Levomycin in Brucellosis (K voprosu o mekhanizme teravpeticheskovo deystviya sintomitsina i levomitsina pri brutselleze).

Orig Pub : Tr. Rostovsk.-n-Donu Gos. n-i in-ta, 1956, 10, 364-391

Abstract : Literary data indicate that when patients afflicted with brucellosis are treated with syntomycin (1) and levomycetin (11) the

Card 1/2

USSR/Pharmacology. Toxicology. Chemotherapeutical Preparations V

USSR/Microbiology - Sanitation Microbiology F-4

Abs Jour : Ref Zhur - Biol., No 4, 1958, 14769

Author : Fomicheva, A.S., Balandin, G.A.

Inst : -

Title : Experimental Use of a Specific Antiphage Serum in Isolatin g Brucella from Goat and Sheep Milk.

Orig Pub : Tr. Rostovsk. n/D. gos. n.-i. protivochumn. in-ta, 1956, 10, 370-374

Abstract : The authors, following experiments by Drzhevkina, utilized a phage serum to facilitate brucella isolation from sheep and goat milk. 0.1 ml of serum was applied to the surface of Martenov agar slightly dried in a thermostat (at pH 6.9) for 20 minutes before inoculation. Simultaneously the same milk was inoculated on agar without the antiphage serum. Altogether 198 samples of milk from 98 sheep and 2 goats were checked in this manner. In 14 cases brucella cultures were isolated on agar with antiphage serum, and

Card 1/2

USSR/ Microbiology. Sanitary microbiology F-4

Abs Jour: Ref Zhur - Biol., No 6, 1958, 24189

Author : Balandin, G.A., Ovanesova, N.G., Minkov, G.B.
Inst : Not given
Title : On the Problem of the Method of Investigating Cows' Milk for Brucellosis.

Orig Pub: Tr. Rostovsk. n D. gos. n.-i. protivochumn. in-ta, 1956, 10, 375-383

Abstract: Samples of milk were tested for brucellosis by three parallel methods: by the Khedlson method in whole milk and whey obtained by curdling with rennin, and a ring reaction. Altogether the milk of 212 cows was examined, 848 samples from each quarter of the udder, and 212 aggregate samples. In addition, milk from 15 cows was tested in moving through the field 3 times at 10 and 12 day intervals (10 cows)

Card 1/2

USSR/ Microbiology. Sanitary microbiology F-4

Abs Jour: Ref Zhur - Biol., No 6, 1958, 24189

Abstract: and at 16 and 23 days (5 cows). The most reliable results were obtained from the Khedlson whey reaction. The ring reaction is less sensitive than the Khedlson reaction with whole milk, and even more so with whey. The content of antibrucellosis agglutinins in milk of cows with brucellosis does not depend on their content in the blood and is inconstant, as they may disappear and appear anew, and may be contained in all parts of the udder or only in separate quarters.

Card 2/2

BALANDIN, G.A.

Method for preparing Wright's reaction. Lab. delo 7 no.2:52-54 F '61. (MIRA 14:1)

1. Rostovskiy-na-Donu gosudarstvennyy nauchno-issledovatel'skiy protivochumnyy institut.
(BRUCELLOSIS)

BALANDIN, G.A.

Brucellosis; is it an intestinal infection? Zhur. mikrobiol., epid. i immun. 33 no.7:141-144 Jl '62. (MIRA 17:1)

1. Is Rostovskogo-na-Donu nauchno-issledovatel'skogo protivochumnogo instituta Ministerstva zdravookhraneniya SSSR.

BALANDIN, G.A.

Inexpedinecy of vaccinal prevention of the bovine type of brucellosis. Zhur. mikriobiol., epid. i imum. 40 no.6:8-12 Je '63. (MIRA 17:6)

1. Iz Rostovskogo-na-Donu nauchno-issledovatel'skogo protivochumnogo instituta.

BALANDIN, G.A.; SAZYKIN, S.P.

Postvaccinal pathergy in brucellosis. Report No. 1. Zhur. mikrobiol., epid. i immun. 40 no. 8:44-49 Ag '63. (MIRA 17:9)

1. Iz Rostovskogo-na-Donu nauchno-issledovatel'skogo protivochumnogo instituta.

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BALANDIN, G.A.; SAZYKIN, S.P.

Postvaccinal pathergy in brucellosis. Report No.1. Zhur. mikrobiol., epid. i immun. 41 no.1:81-84 Ja '64. (MIRA 18:2)

1. Rostovskiy-na-Donu nauchno-issledovatel'skiy protivochumnyy institut.

BALANDIN, G.A.

Use of safranine for the species differentiation of Brucella.
Zhur.mikrobiol., epid. i immun. 42 no.4:89-91 Ap '65.
(MIRA 18:5)

1. Rostovskiy-na-Donu nauchno-issledovatel'skiy protivochumnyy institut.

BALANDIN, G. F.

Balandin, G. F. - "The theory of cast hardening," Trudy Studench. nauch.-tekhn. o-va (Moscow technical college im. Bauman), 1, 1948, p. 15-40

SO: U-4355, 14 August 53, (Letopis 'Zhurnal 'nykh Statey, No. 15, 1949)

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BALANDIN, G. F., Engr

USSR/Engineering - Casting Apr 52

"Influence of the Wall Thickness of a Mold on Ingot Solidification," N. N. Rubtsov, Honored Sci, Laureate Stalin Price, G. F. Balandin, Engr, Moscow Higher Tech School imeni Bauman

"Litey Proizvod" No 4, pp 16-19, 1952

Analyzes process of ingot solidification and effect of mold walls on rate of process. Discusses effect of gap between ingot and mold during solidification and adopts method of successive approximation for calcn of mold. States great variety and contradiction in conclusions or various investigations on the subject.

PA 213T67

PAL[illegible], [illegible]

Square Root

Law of the square root. Lit. proizv. No. 3, 1953.

Monthly List of Russian Accessions, Library of Congress
June 1953. UNCL.

BALANDIN, Grennadiy (F.)

"An Investigation of the Process of Crystallization in Cast Iron Under Various Conditions of Thermal Interaction Between the Cast Material and the Mold,"

a dissertation presented to the Scientific Council of the Moscow Higher School imeni Bauman on 8 March 1954.

Basing his work primarily on the theoretical assumptions of N. T. Gudtsov, Balandin built a special instrument to record the temperature curve of the cooling of cast iron. He also devised a constitution diagram for cast iron which provides heretofore unavailable data, and built an instrument with sensing elements which contact the crystals inside a molten metal and impart their speed of growth to a recorder. This instrument measures the rate of crystallization of cast material more accurately than any former method. - S. Revzin

Sum #196, 30 Aug 54

BALANDIN, O.F., kandidat tekhnicheskikh nauk.

Kinetics of the crystallization of castings. [Trudy] MVTU no.45: 25-65 '55. (MLRA 10:6)
(Crystallization) (Steel castings)

18(5), 25(5) SOV/159-58-3-18/31

AUTHOR: Balandin, G.P.

TITLE: The Theory of Compacting Casting Molds

PERIODICAL: Nauchnyye doklady vysshey shkoly, Mashinostroyeniye i priborostroyeniye, 1958, Nr 3, pp 122-131 (USSR)

ABSTRACT: This report was delivered at the inter-vuz scientific-technological conference held at MVTU imeni Baumana in January 1958. In foundry practice, the experimental formula of N.P. Aksenov described the dependence of the mixture compactness value δ g/cu cm on the pressure p kg/sq cm under the pressure block during pressing:

$\delta = 1 + Cp^{0.25}$ whereby C is the compressibility factor of the mixture. The strict correspondence of the mixture density to the external load value indicates that the external forces acting on a mixture are opposed by internal forces whose magnitude is determined by the mixture properties and the external pressure. Therefore, the mixture compacting process should be considered as a process of overcoming the internal forces,

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opposed to a free reduction of the mixture volume. Th: compacting is terminated as soon as the external forces are balanced by the internal ones. For renewing this process an increase of the external forces is required. For developing more ration' compacting methods and designs of molding machines, it is necessary to have a clear picture of the character of the connections, existing between the mixture properties and those internal forces opposing the mold condensation under the influence of different external pressures. In his investigation, the author considers mold and core mixtures as an elasto-viscous compressible material with strongly accentuated viscosity properties. He presents equations in a general form for the mixtur' compactness, which express the dependance of the degree of mol: compactness on the impule magnitude of the external load. He recommends the equations for practical application. The author explains the structure of molding mixtures, the mechanics of mixtur: compacting, the characteristics of the mixture state, changes occurring in the mixture

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The Theory of Compacting Casting Molds SOV/159-58-3-18/31

structure during compacting, the characteristics of the mixture properties, the mixture viscosity during compression, the initial resistance to compacting and equations for determining the mechanical work spent for compacting of mixtures. There are 2 graphs, 1 photograph, 1 sketch and 7 Soviet references.

SUBMITTED: March 19, 1958

Card 3/3

BALANDIN, G.F.

Theory of the compression of molding mixtures [with summary in English].Inzh.-fiz. zhur. no. 9:63-73 S '58. (MIRA 11:10)

1. Vyssheye tekhnicheskoye uchilishche imeni Baumana, g. Moskva.
(Molding(Founding))

GOLOVIN, Sergey Yakovlevich; RUBTSOV, N.N., prof., doktor tekhn.nauk, zasl. deyatel' nauki i tekhniki, retsenzent; PLATONOV, P.M., inzh., retsenzent; BALANDIN, G.F., kand.tekhn.nauk, red.; LEYKINA, T.L., red.izd-va; SHCHETININA, L.V., tekhn.red.

[Special kinds of casting; concise reference data] Osobye vidy lit'ia; kratkie spravochnye materialy. Moskva, Gos. nauchno-tekhn.izd-vo mashinostroit.lit-ry, 1959. 462 p. (Founding) (MIRA 12:6)

18(5,7) SOV/128-59-7-7/25

AUTHOR: Rubtsov, N.N., Doctor of Technical Sciences, Savkin, G.Ya. and Stepanov, Yu.A., Engineers, and Balandin, G.F., Candidate of Technical Sciences

TITLE: Producing Steel Castings by the Squeezing-Out Method

PERIODICAL: Liteynoye Proizvodstvo, 1959, Nr 7, pp 17-18 (USSR)

ABSTRACT: According to the method developed by F.S. Stebakov (Liteynoye Proizvodstvo, Nr 12, 1956) many large casting shapes, with thin walls, for aircraft manufacture can be produced from aluminum alloys. The laboratory of the foundry at MVTU "Imeni Baumann" has carried out similar experiments for work pieces of 500 by 900 cm with wall thickness of 4 to 5 mm made from steel. The experiments with steel have been executed in the manner as the above-mentioned experiments made with aluminum (L.P. 12/1956). One drawing explains only the special method of pouring the metal into the molds. There follows a description and explanation of how

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SOV/128-59-7-7/25

Producing Steel Castings by the Squeezing-Out Method

important it is to have a quick flow and a fast cooling-off for the metal. In case the flow of the metal was slower than 2 m per second, thin-walled castings could not be produced during the experiments. The accomplishment of the required velocity of flow can only be achieved by means of automatically controlled mechanical installations. There are 1 diagram and 1 microphotograph

Card 2/2

VEYNIK, Al'bert Iosefovich; NOVIKOV, P.G., kand.tekhn.nauk, retsenzent; BALANDIN, G.F., kand.tekhn.nauk, red.; OSIPOVA, L.A., red.izd-va; MODEL', B.I., tekhn.red.

[Theory of the solidification of castings] Teoriia zatverdevaniia otlivki. Moskva, Gos.nauchno-tekhn.izd-vo mashinostroit.lit-ry, 1960. 434 p. (MIRA 13:5)

(Solidification) (Founding)

BALANDIN, Gennadiy Fedorovich; POGODIN-ALEKSEYEV, Georgiy Ivanovich, doktor tekhn.nauk, prof.; RAZUMOV, Nikolay Alekseyevich; SHPITAL'NYY, Boris Gavrilovich; SHCHERBINA, Nikolay Avksent'yevich; KOKOSHKO, A.G., red.; NAUMOV, K.M., tekhn.red.

[Hot working of metals] Goriachaia obrabotka metallov. Moskva, Izv-vo VPSh i AON pri TsK KPSS, 1960. 148 p. (Dostizheniia nauki i tekhniki i peredovoi opyt v promyshlennosti i stroitel'stve, no.3). (MIRA 13:8)

(Metalwork)

APPROVED FOR RELEASE: Wednesday, June 21, 2000 CIA-RDP86-00513R000103

18(7)

SOV/125-60-1-2/18

AUTHORS: Yerokhin, A.A., Balandin, G.F., Kodolov, V.D.

TITLE: The Influence of Supersonic Oscillations on the Crystallization of the Seam in Electroslag Welding

PERIODICAL: Avtomaticheskaya svarka, 1960, Nr 1, pp 15-20 (USSR)

ABSTRACT: In the welding laboratory of the Institute of Metallurgy imeni A.A. Baykov AS USSR experiments are being conducted on the possibility of using ultrasound in welding, particularly in the electroslag welding of chromo-nickel austenite steels. Two methods of introducing ultrasound into the molten pool have been tested: directly with the aid of a waveguide (Figure 1) and by means of a wire passing through a special slip-device in a steel resilient oscillations waveguide linked to a magnetostrictive vibrator (Figure 2). Both methods are discussed in detail and compared. The experiments proved that ultrasound can be used to influence the crystallization process of the metal in the electroslag seam.

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BALANDIN, G.F., kand.tekhn.nauk, dotsent; STEPANOV, Yu.A., aspirant

Interaction of stresses in molds and solidifying castings. Izv. vys.ucheb.zav.; mashinostr. no.1:139-149 '61. (MIRA 14:4)

1. Moskovskoye vyssheye tekhnicheskoye uchilishche imeni Baumana. (Molding (Founding))

BALANDIN, G.F., kand.tekhn.nauk, dotsent

Structural zones in castings. Isv.vys.ucheb.sav.; mashinostr. no.1: 150-163 '61. (MIRA 14:4)

1. Moskovskoye vyssheye tekhnicheskoye uchilishche imeni Baumana. (Founding)

BALANDIN, G.F., dotsent, kand.tekhn.nauk

Crystallization of castings under the action of vibration and ultrasonic waves on molten metal. Izv.vys.ucheb.zav.; mashinostr. no.4:24-34 '60. (MIRA 14:4)

1. Moskovskoye vyssheye tekhnicheskoye uchilishche im. N.E.Baumana. (Founding) (Ultrasonic waves--Industrial applications)

APPROVED FOR RELEASE: Wednesday, June 21, 2000 CIA-RDP86-00513R000103

86694

1.2310

S/180/60/000/006/004/030
E021/E335

AUTHORS: Balandin, G.F. and Silin, L.L.

TITLE: The Role of Friction During Ultrasonic Welding

PERIODICAL: Izvestiya Akademii nauk SSSR, Otdeleniye tekhnicheskikh nauk, Metallurgiya i toplivo, 1960, No. 6, pp. 42 - 46

TEXT: An investigation of the distribution of the temperature in welded components in the process of ultrasonic welding has been carried out. Curve 1 of Fig. 1 shows the change of temperature (t, °C) with time (τ, sec) when plates of chromel and alumel of thickness 0.1 mm were joined. Curve 2 in Fig. 1 shows the change in the strength (Q_{av}, kg) of the joint with time. The maximum temperature occurred at the time when the strength of the compound had become constant. Zero strength did not coincide with the time of the beginning of the increase in temperature. The results can be explained in terms of friction. The increase in temperature is caused by heat generated by the relative movement of the two components. When a joint is made, there is no relative movement and the

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S/180/60/000/006/004/030
E021/E335

The Role of Friction During Ultrasonic Welding

temperature drops. The strength of the joint does not increase from the moment when the temperature increases because the surface films (oxides, etc.) on the components must first be destroyed. Fig. 2 shows the temperature change at the point of contact between the tip of the ultrasonic instrument and the higher component (Curve 1) and at the contact between the two components (Curve 2). It can be seen that a joint is first established between the tip of the instrument and the top component. The characters of the two joints are different because the tip of the instrument is very hard and the two components are relatively plastic materials. Fig. 3 is a microphotograph of a joint between two copper plates and shows the region where intensive plastic deformation has taken place. Fig. 4 shows the distribution of temperature in the top and lower components during welding. There is a high temperature gradient at the surface of contact between the two components. More heat is generated directly below the ultrasonic

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APPROVED FOR RELEASE: Wednesday, June 21, 2000 CIA-RDP86-00513R000103

86694

S/180/60/000/006/004/030
E021/E335

The Role of Friction During Ultrasonic Welding

instrument because the relative movement of the two components is greatest at this point.
There are 4 figures and 7 references: 3 Soviet and 4 non-Soviet.

SUBMITTED: June 18, 1960

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Card 3/3

18.4000 2508

S/128/60/000/007/004/017
A105/A033

AUTHORS: Balandin, G.F., Gini, E.Ch., Stepanov, Yu.A. and Yakovlev, Yu.P.

TITLE: Casting With a Vibration Pouring Device

PERIODICAL: Liteynoye proizvodstvo, 1960, No. 7, pp. 34-36

TEXT: The authors mention the effect of vibration on metal crystallization and describe tests performed with a vibration pouring device (Fig.1), designed by the members of the Institut metallurgii imeni A.A. [illegible], AN SSSR (Institute of Metallurgy imeni A.A. Baykov of the AS USSR), G.F. Balandin and V.A. Petrunichev. Fig.2 shows macrosections of A2 aluminum ingots. The ingot shown in Fig.2a was poured with the aid of a non-vibrating device, ingot shown in Fig.2b through a vibrating funnel with a frequency of 230 oscillations/sec., an amplitude of 0.1 mm, power 1 kw, temperature of liquid aluminum 720°C, ingot weight 2 kg and pouring time 4 seconds. The ingot obtained with the vibration pouring device was finer grained and its plasticity increased by 20% (see Table). Tests showed that casting through a vibrating pouring device produces the same effect as pouring into vibrating molds. A

X

Card 1/3

considerable crushing of grains in the ingots indicates an increase of the crystallization centers in the liquid metal during vibration. Fig.3 shows specimens on which the tendency of aluminum alloys to hot cracks was tested. The specimen of AD1 aluminum (Fig.3a) was poured through a non-vibrating funnel; the one shown in Fig.3b was poured through a vibrating funnel at 720°C and showed no hot cracks. As the metal is poured through the vibrating funnel the walls become coated with a hard layer of metal. This layer is broken by the vibration of overheated liquid metal and solid metal pieces are carried into the mold together with liquid metal, where they melt partly or completely. If no complete melting is reached by the time the metal begins to solidify, these solid phases become centers of crystallization. Fig.4 shows a macrophotograph of the longitudinal section of the coating removed from the funnel walls after pouring of aluminum under vibration while Fig.5 shows the longitudinal section of an ingot completely solidified in a vibrating funnel. A distinct boundary can be observed between the acicular crystal zone and the central crushed grains zone. The grain size depends on the temperature of the metal during pouring. Higher temperatures ensure complete melting of the solid phase by the time crystallization of the metal begins. Higher resistance to hot cracks is attributed to an increase in plasticity

Casting With a Vibration Pouring Device

S/128/60/000/007/004/017
A105/A033

of fine-grained alloys. This method improves the mechanical properties of alloys and increases their resistance to hot cracks. It can be applied to every type of mold and to a great number of alloys without changing the vibrating conditions. A satisfactory vibration effect was obtained with AL-4, AL-2, "avial"-type alloys and 15L steel. There are 6 figures, 1 table and 13 references: 11 Soviet and 2 non-Soviet.

X

Card 3/3

[illegible], [illegible] and [illegible]V, [illegible].A.

"[illegible]ower Interaction Between the Casting and the Mould in the Process of Heat Exchange Between Them"

report presented at the 7th Conference on the Interaction of the Casting Mould and the Casting, sponsored by the Inst. of Mechanical Engineering, Acad. Sci. USSR, 25-2[illegible] January 1961.

BEDEL', Vladimir Konstantinovich, inzh.; BALANDIN, G.F., kand.tekhn.nauk, retsenzent; SIROTIN,A.I., inzh., red.izd-va; GORDEYEVA, L.P., tekhn.red.

[Low-pressure casting] Lit'e pod nizkim davleniem. Moskva, Gos.nauchno-tekhn.izd-vo mashinostroit.lit-ry, 1961. 227 p.
(Die casting) (MIRA 14:7)

BALANDIN, G.F., kand.tekhn.nauk, dotsent; GINI, E.Ch., aspirant

Interaction of melt with the crystallisation front of the solidifying casting. Izv.vys.ucheb.zav.; mashinostr. no.4:199-204 '61. (MIRA 14:6)

1. Moskovskoye vyssheye tekhnicheskoye uchilishche imeni Baumana. (Founding)

11500

27727
S/128/61/000/008/004/004
A054/A127

AUTHORS: Balandin, G. F., Gini, E. Ch., Sokolov, Ye. A., Stepanov, Yu. A. Yakovlev, Yu. F.

TITLE: Casting thin-walled, large-sized panel compounds in green sand-clay molds

PERIODICAL: Liteynoye proizvodstvo, no. 8, 1961, 38 - 39

TEXT: The casting of thin-walled, large-size panel parts of aluminum and magnesium alloys ensures a considerable saving in the weight of these components and in time. On the other hand some difficulties must be overcome, in the first place those encountered in filling the mold with the liquid metal. In the Soviet Union thin-walled panels are cast by successive crystallization or extrusion. The latter method is applied for АЛ4 (AL4) aluminum alloy sheets 800 x 1,500 x 2 - - 5 mm in size, moreover for AL2 and МЛ5 (ML5) alloy panels. However, when applying the method for heat-resistant and high-strength AL8, AL19, В15 (V15) alloys, hot cracks are forming. In order to establish the cause of this defect tests were carried out at the Liteynaya Laboratoriya MVTU im. Baumana (Foundry Laboratory MVTU im. Bauman) and it was found that panel elements 500 x 800 x 3 - 4 mm

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A054/A127

Casting thin-walled, large-sized ....

in size could be cast from AL19 and V15 alloys by applying the conventional casting and using green sand-clay molds. Test panels, 250 x 300 x 2 mm in size were cast using a channel (12 x 12 mm) around the panel which considerably facilitated the filling of the mold. The removal of air and gases from the mold cavities is also important in this process. When applying 0.3 - 0.4 mm thick inserts on the parting surface of the mold during the assembly, the filling of the mold improved, the ventilation through the narrow aperture at the parting surface of the mold became more intensive. The circumferential channel, the slot-type feeding system operating over the entire periphery of the casting, a high-capacity slag-chamber and a riser with a considerable cross section ensure a great intake of the liquid metal and an instantaneous filling of the mold. Moreover, ribs formed on the casting also promote a rapid filling of the narrow spaces. The gate and the ventilation system based on the above principles for casting 500 x 800 x 3 - 4 mm panels are shown. The molding mixture used consists of 55 - 60 % П01 (PO1) type Tambovsk sand, 45 - 50 % quartz sand and chalk, having a humidity of 6 %, a gas permeability of 54 units and a compression strength of 0.24 - 0.27 kg/cm^2. The binder contained 10 % Tambovsk sand and 90 % burnt sand and had a humidity of 4.5 % and a compression strength of 0.35 kg/cm^2. It was found that the applica-

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tion of inserts at the parting surface of the mold had an adverse effect on the accuracy of the panel dimensions. Therefore, to promote ventilation, instead of using inserts, 1.0 - 1.5 mm wide grooves were cut in the parting surface along the periphery of the casting. This arrangement required a high casting temperature, (for the AL 4 alloys: 820 - 830°C, for the AL 19 and V15 alloys: 850 - 860° C). On the other hand the high temperature promoted the formation of cavities (in some cases the casting split into two parts). This could be eliminated by controlling the density of the mixture in the upper part of the mold by changing its composition and the intensity of ramming. In this way panels can be cast also from X18H9T (Kh18N9T) steel in dry sand molds. The mechanical properties of AL4, V15 and Kh18N9T steel panels meet the standards set. A deterioration of the mechanical characteristics could only be observed in AL 19 panels. This was caused by a lack of heat resistance in the metal. When coating the casting surface with hexachlorethane, however, the casting temperature of the AL19 alloy sheets could be reduced from 850 to 730°C. The dimensional accuracy of the castings depended on the assembling accuracy of the mold and on the stability of the bottom plate. During assembling the mold showed a deformation of 0.1 - 0.25 mm, while during transportation (shocks) the deformation of the thickness of the casting attained 0.4 - 0.5 mm (20 - 30 %). For this reason the application of dry sand core or

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S/128/61/000/008/004/004
A054/A127

Casting thin-walled, large-sized ....

shell molds is indicated. There are 1 figure and 9 references: 7 Soviet-bloc, 2 non-Soviet-bloc. The references to English-language publications read as follows R. H. Osbrink, "Modern Castings", October 1958; N. C. Flemings et. al., Transactions A.F.S.," 1959.

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S/145/61/000/004/008/008
D221/D301

AUTHORS: Balandin, G.F., Candidate of Technical Sciences, Docent, and Gini, E.Ch., Aspirant

TITLE: Interaction of melt with the crystallization front in a casting during its solidification

PERIODICAL: Izvestiya vysshikh uchebnykh zavedeniy. Mashinostroyeniye, no. 4, 1961, 199 - 204

TEXT: The foundry laboratory of MVTU im. Baumana (MVTU im. Bauman) carried out research on the solidification in a flow in order to determine the effect of the velocity of motion of the metal on solidification. The solidification took place over a rotating cast iron or sand rod, held in a verticle spindle and lowered into a melt maintained at a constant temperature. Heating of the rod was eliminated by the use of asbestos lining on the end face of the rod where no deposit was noticed. The experiment lasted only 3 seconds and the rod did not heat throughout. The author gives graphs of the relationship between the thickness of crust and the temperature of melt, with the rod being at rest. A different result was obtained with a rotating rod and АЛ4 (AL4) alloy. The analysis of data permits the assumption that there is a simultaneous solidification and partial melting of the hard core. This process is determined by the interaction between the liquid metal and the hard core on the boundary line. Its intensity depends on the coefficient of heat transfer α_m between these two phases. It is assumed that $\xi(\tau_o)$ is the thickness of core hardened in 3 seconds when the overheating was zero; ξ is the thickness of the hardened core during the same period τ_o = 3 sec. and an overheating $t_{cast} - t_{cr} \neq 0$. Then ξ is given by

$$\xi = K \frac{B}{\rho_1 \gamma_1} \delta_{cr} \frac{\tau^n}{n}, \text{ m.} \qquad (1)$$

The theory of heat transfer provides $\alpha_n = \alpha_m^1 + Av^n$, where α_m' is the coefficient of heat transfer in the absence of forced motion; v is the speed of the forced motion and A and n are constants. The redu-

33178

S/180/61/000/006/008/020
E071/E335

18 1500 2408

AUTHORS: Amfiteatrova, T.A., Balandin, G.F., Kodolov, V.D. and Silin, L.L. (Moscow)

TITLE: The breaking-up of grains of solidifying metal under the action of ultrasonic vibrations

PERIODICAL: Akademiya nauk SSSR. Izvestiya. Otdeleniye tekhnicheskikh nauk. Metallurgiya i toplivo, no. 6, 1961, 79 - 87

TEXT: The action of ultrasonic vibrations on the solidification of aluminium in steel moulds of 50 mm in diameter was investigated by metallographic examination of the castings produced at the Laboratoriya teorii svarochnykh protsessov Instituta metallurgii imeni A.A. Baykova (Laboratory of the Theory of Welding Processes of the Institute of Metallurgy im. A.A. Baykov). Ultrasonic vibrations were produced by means of a magnetostrictive generator, the end face of which oscillated with a frequency of 20 kc/s and an amplitude of 32 μ; the power input was 2.0 to 2.5 kW. The diameter of the contact face was 22 mm and the ingot-mould diameter was 50 mm. The first

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E071/E335

The breaking-up of grains ....

experiments were carried out by decanting the liquid metal remaining after different lengths of time. Metallographic examination of longitudinal sections showed that solidification took place from the periphery inwards. The structure immediately adjacent to the walls was not destroyed by the ultrasonic vibrations and was still columnar. The remainder of the casting was fine-grained. It is proposed that the fine grain size is due to nucleation by solid fragments broken from the columnar zone under the action of ultrasonic vibrations. Further experiments showed that the columnar peripheral zone was not present when metal was poured into a mould preliminarily heated to 700 °C. In this case solidification begins only from the contact with the ultrasonic instrument. The solid metal so formed is broken up by the vibrations and causes grain refinement of the casting. The next experiments were carried out by heating the aluminium to 740 - 750 °C and allowing solidification in the crucible in air (cooling rate about 0.5 °C/sec). From the moment when solidification temperature was reached, vibrations were introduced into the melt for different lengths of time

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E071/E335

The breaking-up of grains ....

(from 1 to 10 secs). The metal was more finely grained with longer treatment time. Tests using a pouring temperature of 740 °C and casting into a steel mould showed that the minimum time required for the vibrations to act was 3.5 sec. With a slower rate of cooling longer treatments with ultrasonic vibrations are required to obtain complete grain refinement. The results confirm that it is advantageous to use vibrations on the liquid metal of a welding bath during electro-slag or arc-welding of metals.
There are 8 figures and 14 references: 13 Soviet-bloc and 1 non-Soviet-bloc.

SUBMITTED: August 2, 1960

Card 3/3

BALANDIN, G.F.; GINI, E.Ch.; SOKOLOV, Ye.A.; YAKOVLEV, Yu.P.

Casting of thin-walled, large-sized panel parts in green, sand and clay molds. Lit. proizv. no.8:38-39 Ag '61. (MIRA 14:7)

(Molding (Founding))

31232
S/135/61/000/012/002/005
A006/A101

1.2310

AUTHORS: Balandin, G. F., Silin, L. L., Candidate of Technical Sciences

TITLE: Means of stabilizing conditions of ultrasonic welding of metals

PERIODICAL: Svarochnoye proizvodstvo, no. 12, 1961, 1-6

TEXT: There is as yet no established theory on the mechanism of ultrasonic welding. Previous investigations in this field have shown that the quality of the joint depends mainly on the degree of heating the parts to be welded at the spot of contact and that thermal cycles obtained under different welding conditions can be divided into the following 4 types: 1) the temperature raises to a maximum and then decreases monotonously; 2) during welding, the temperature changes more smoothly and remains constant or increases slightly after the maximum has been attained; 3) temperature raises rapidly until a certain point and then remains almost constant; 4) monotonous temperature increase until thermal saturation at a low rate. Considering the kinetics in the formation of welds the authors studied the aforementioned types of cycle and their combinations, and investigated changes in the oscillation amplitudes, and the structure of joints. It was found that ultrasonic welded joints can be

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APPROVED FOR RELEASE: Wednesday, June 21, 2000 CIA-RDP86-00513R000103

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S/135/61/000/012/001/008
A006/A101

Means of stabilizing conditions ...

produced within a wide temperature range, and that its highest value at the contact spot of the parts is entirely determined by oscillation amplitudes and the contact force. A great part is played by the oscillation amplitude of the instrument. It was found that slight changes in the conditions of transmitting the oscillations to the parts produce weld joints whose structure and quality are sharply different.(Fig. 7). The strength of the joints depends considerably on the hardness and the material of the welding tip. Some recommendations are given for the purpose of raising the quality and strength of joints. To reduce losses in ultrasonic energy, it is suggested that tips be used assuring maximum friction factors with the material welded. The surface and geometry of the tool should be maintained constant. A parameter of ultrasonic welding, which makes it possible to control the quality of joints, should be determined. This parameter would possibly be the acoustic power, passing through the parts, or the oscillation amplitude transmitted to the support (Author's Certificate no. 127471 with priority from January 7th, 1960). Oscillation amplitudes should be stabilized and the capacity of ultrasonic equipment should be raised. There are 8 figures and 10 references: 6 Soviet-bloc and 4 non-Soviet-bloc. The reference to the most recent English-language publication reads as follows: Tarthoff, W., Thomas, J., Meyer, F. Ultrasonic welding of dissimilar metal combinations

X

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Means of stabilizing conditions...

S/135/61/000/012/001/008
A006/A101

finds growing application in structural electric and electronic fields "Welding Journal, no. 12, 1960."

ASSOCIATION: Institut metallurgii im. A. A. Baykova AN SSSR (Institute of Metallurgy imeni A. A. Baykov, AS USSR)

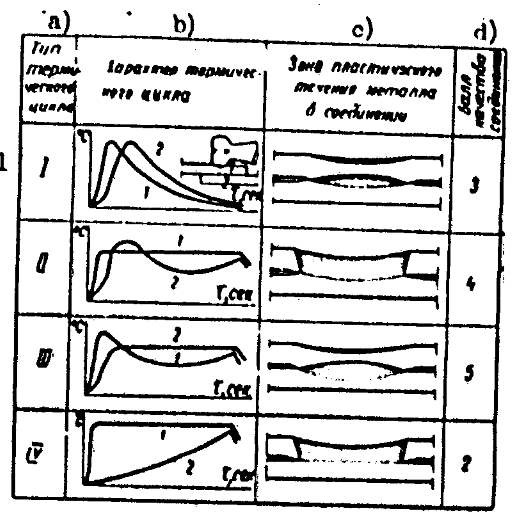

Fig. 7: Classification of types of thermal cycle in ultrasonic welding and the location of the respective zones of plastic deformation in the joint
Legend: a) Type of thermal cycle; b) Nature of thermal cycle; 2) Zone of plastic metal flow in the joint; d) Quality number of joint.

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ALEKSIJEVIC, Aleksandar, inz., asistent, [translator] (Zagreb), EGOHIN, A.A., [Yegokhin, A.A.]; BALANDIN, G.F.; KODOLOV, B.D.

Influence of ultrasonic oscillations on the crystallization of the weld in electric welding under slag. Zavarivanje 4 no.4:82-84 Ap '61.

1. Metalurski institut A.A.Baikova, A.N. SSSR (for Egohin, Balandin and Kodolov). 2. Visoka tehnicka skola u Zagrebu, Zagreb.

STEBAKOV, Yemel'yan Semonovich; TARUTIN, Vasiliy Yakovlevich; BALANDIN, G.F., kand. tekhn. nauk, retsenzent; KRYLOV, V.I., inzh., red.; CHERNYAK, O.V., red. izd-va; SOKOLOVA, T.F., tekhn. red.

[Compression casting] Lit'e vyzhimaniem. Moskva, Mashgiz, 1962. 250 p. (MIRA 15:3)

(Founding)

APPROVED FOR RELEASE: Wednesday, June 21, 2000 CIA-RDP86-00513R000103

BALANDIN, G. F.

PHASE I BOOK EXPLOITATION SOV/6020

Silin, Lev Leonidovich, Gennadiy Fedorovich Balandin, and Moisey Grigor'yevich Kogan

Ul'trazvukovaya svarka; soyedineniye metallov v tverdom sostoyanii i uluchsheniye kachestva svarnykh shvov (Ultrasonic Welding; Joining Metals in a Solid State and Improvement of the Weld Quality) Moscow, Mashgiz, 1962. 251 p. 11,000 copies printed.

Ed. (Title page): N. N. Rykalin; Reviewers: K. K. Khrenov, Corresponding Member, Academy of Sciences of the USSR, and P. K. Oshchepkov, Doctor of Technical Sciences; Ed.: O. V. Chernyak; Tech. Ed.: B. I. Model'; Managing Ed. for Literature on the Hot Working of Metals: S. Ya. Golovin, Engineer.

PURPOSE: This book is intended for technical personnel of plants, scientific research institutes, and planning organizations.

COVERAGE: The book is the first Soviet monograph devoted to the application of ultrasound to welding processes. Part I, written by L. L. Silin, discusses the question of joining metals in a solid state; Part II, by G. F. Balandin, the

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Ultrasonic Welding (Cont.)

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effect of ultrasound on the crystallizing metal; and Part III, by M. G. Kogan, the methods of generation of ultrasonic vibration in parts. Particular attention is given to the technology of ultrasonic welding and to the utilization of elastic oscillations for improvement of the weld metal quality. Problems of the calculation and design of generators of ultrasonic vibration are reviewed. No personalities are mentioned. There are 167 references, mostly Soviet.

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APPROVED FOR RELEASE: Wednesday, June 21, 2000 CIA-RDP86-00513R000103

BALANDIN, Gennadiy Fedorovich; KOTSYUBINSKIY, O.Yu., kand. tekhn. nauk, retsenzent; CHERNYAK, O.V., inzh., red.; CHERNOVA, Z.I., tekhn. red.

[Chill casting] Lit'e namorazhivaniem. Moskva, Mashgiz, 1962. 261 p. (MIRA 15:3)

(Founding)

BALANDIN, G.F.; STEPANOV, Yu.A.

Force interaction between a casting in process of solidification and the mold. Lit. proizv. no.4:37-41 Ap '62. (MIRA 15:4)
(Molding (Founding))

S/145/62/000/007/001/003
D262/D308

AUTHORS: Balandin, G.F., Candidate of Technical Sciences, Docent and Gini, E.G., Candidate of Technical Sciences, Assistant

TITLE: Character of destruction of the front of crystals growing from the walls of the half-forms, during casting by pressing out, in the process of forming thin-walled cast panels

PERIODICAL: Izvestiya vysshikh uchebnykh zavedeniy, Mashinostroyeniye, no. 7, 1962, 132-139

TEXT: The authors survey the process of the panel moulding during flat, parallel and angular pressing out operations, i.e. by parallel and angular displacements with respect to the moving half-mould. The method of operation and the phenomena taking place during the operation are described in detail. The mathematical analysis of the process for the angular operation, with reference to a previous work, (dealing with the parallel operation) by the same

Card 1/2

Character of destruction ... S/145/62/000/007/001/005
D262/D308

authors (Mashinostroyeniye, 1961, no. 5), and the experimental results show that the conditions of forming of thin-walled panels during casting by pressing out are analogous to those during normal casting in sand forms. There are 5 figures.

ASSOCIATION: MVTU im. N.E. Baumana (MVTU im. N.E. Bauman)

SUBMITTED: November 20, 1961

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S/126/62/013/003/015/023
E193/E383

1.15oo

AUTHORS: Balandin, G.F. and Yakovlev, Yu.P.

TITLE: On the problem of the effect of vibration on solidification of alloys in castings

PERIODICAL: Fizika metallov i metallovedeniye, v. 13, no. 3, 1962, 436 - 440

TEXT: It has already been established that the effectiveness of vibration as a means of grain-refining of the structure of castings varies from alloy to alloy. It has been possible in the case of some materials to determine the optimum conditions of this treatment; in the case of other (pure zinc and the 18-8 stainless steel, in particular) materials, the treatment seems to be ineffective irrespective of the frequency, amplitude and intensity of vibrations employed. The present author analyzed the relevant experimental evidence and came to the conclusion that the most likely explanation of the different response of various metals to vibration is best explained in terms of the theory according to which the grain-refinement brought about by the application of vibration to a molten alloy

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during casting is due to the fact that this treatment increases the number of crystal fragments broken away from the solidifying skin, providing additional crystallization nuclei. If this theory is correct, then, all other conditions being equal, the beneficial effect of the vibration should be closely related to the strength of the crystals of a given alloy near its solidus. Using his own experimental results and data obtained by M.N. Bochay (Mechanical properties of aluminium alloys during solidification in relation to the formation of hot-welding cracks (Mekhanicheskiy svoystva alyuminiyevykh splavov v protsesse kristallizatsii i ikh svyaz') - Dissertation, Moscow, 1958), the present authors constructed a graph, reproduced in Fig. 3, where the UTS (σ, kg/mm) of Al-Si alloys near the solidus temperature, the thickness (H, mm) of the columnar-crystals zone and the average grain size (d, mm) in ingots cast from a vibrated tundish are plotted atainst the silicon content (%) of the alloy. It will be seen that the concentration dependence of these three properties follows the same course. Since X

APPROVED FOR RELEASE: Wednesday, June 21, 2000 CIA-RDP86-00513R000103

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E193/E383

On the problem of ....

graphs constructed for Al-Cu alloys and steels showed a similar relationship, it was concluded that the extent of the columnar-crystal zone and the average grain size in metal castings were in fact related to the strength at temperatures near the solidus and that this relationship determined the effectiveness of vibration treatment as a means of grain-refining of cast structures. There are 4 figures.

ASSOCIATION: Moskovskoye vyssheye tekhnicheskoye uchilishche im. Baumana (Moscow School of Higher Technical Education im. Bauman)

SUBMITTED: June 24, 1961

Card 3/4

X

APPROVED FOR RELEASE: Wednesday, June 21, 2000 CIA-RDP86-00513R00010:

45224

1,2310

S/775/62/002/000/007/011

AUTHORS: Balandin, G. F., Kodolov, V. D.

TITLE: Ultrasonics in submerged automatic electric slag welding.

SOURCE: Avtomatizatsiya protsessov mashinostroyeniya. t. 2: Goryachaya obrabotka metallov. Moscow, Izd-vo AN SSSR, 1962, 209-213.

TEXT: The welding lab of the Institute of Metallurgy imeni A. A. Baykov, AS USSR, has investigated the use of ultrasonics (US) in the welding (WG) of metals and, more especially, in the submerged automatic electric slag WG of austenitic steels. In WG of X25H20 (Kh25N20) steel and X20H80 (Kh20N80) alloy the use of US reduces the hot-cracking tendency, probably by disrupting their columnar structure and reducing the grain size. US was introduced into the welding bath: (1) Directly through the wave guide that is rigidly connected to the magnetostriction transformer; (2) through an extension welding rod slide-fitted into an aperture in the wave guide. Method (1) is suitable for vertical WG and for slag-bath and Thermit WG of rods. Problem: Even a water-cooled Cu wave guide disintegrates soon when in contact with the molten slag bath; on the other hand, a contact between the wave guide and the solid metal just below the bath is not equally effective. A water-cooled steel wave-guide with a water-cooled copper tip serves best. The grain size in the weld metal is substantially reduced (photos), its strength and elongation

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is not altered, its notch toughness is increassed 15-20%. If the wave-guide tip is permitted to become welded onto the weld metal, the US effectiveness increases, but this method is applicable to short welds only. Method (2) is also practicable and effective, but it incurs a special problem in the welding-rod feed rate: If the rod feeds too fast, it penetrates deeply into the bath and the US effect is strong, but the rod does not melt evenly and whole hunks of it are found floating in the bath; if the rod feeds too slowly, it melts before it can attain an appreciable immersion depth in the bath, and the US effect is scant or nonexisting. Hence, the feed rate must be selected for optimal compromise performance. On balance, method (2) has proved more effective and was employed in the tests in which the effectiveness of US in reducing hot-cracking tendency was ascertained. The possibilities inherent in the use of an US welding rod that is chemically different and electrically insulated from the welding wire are far-reaching, especially in inhibiting grain growth and intercrystalline corrosion in austenitic steels, elements that are of great essence in improving their creep behavior. Also of interest is the US welding of chromous ferrite steels with up to 27% Cr, which are eminently notch-sensitive, regardless of their heat treatment. These steels have a notch toughness at room temperature of some tenths of one kgm and a tendency toward irreversible grain growth. The US work of Ya. V. Gurevich, V. I. Leont'yev, and I. I. Teumin has shown that the notch toughness of the Cr steel X27 (Kh27) can be increased significantly by reducing the grain size. There are 3 figures; no tables or references. ASSOCIATION: None given.

BALANDIN, G. F.

Approximate analysis of the kinetics of crystallization during the continuous cooling of melts in foundry molds. Fiz. met. i metalloved. 14 no.4:595-601 0 '62. (MIRA 15:10)

1. Moskovskoye vyssheye tekhnicheskoye uchilishche imeni Baumana.

(Metal castings--Cooling) (Crystallization)

BALANDIN, G. F., kand. tekhn. nauk, dotsent; GINI, E. G., kand. tekhn. nauk, assistent

Role of the destruction of the front of crystals growing from semimold walls in pressure casting during the process of the formation of thin-walled panel castings. Izv. vys. ucheb. zav.; mashinostr. no.7:132-139 '62. (MIRA 16:1)

1. Moskovskoye vyssheye tekhnicheskoye uchilishche imeni Baumana.

(Machine molding(Founding))

18 4000

S/136/61/000/001/006/010
E021/E206

AUTHORS: Balandin, G. F. and Yakovlev, Yu. P.

TITLE: The Use of Vibration During the Continuous Casting of Non-ferrous Metals and Alloys

PERIODICAL: Tsvetnyye metally, 1961, No. 1, pp. 75-78

TEXT: Experiments have been carried out on casting aluminium alloys using a vibrating pouring arrangement with the mould remaining still. The macrophotos (Fig. 1) show the effect of this treatment on alloys AMn, AV and Al cast at 720°C into a water cooled mould, 1a without any vibration and 1b with a vibrating funnel. The method was also tried for continuous casting. Fig. 2 shows the simple apparatus used, consisting of a mould and a vibrating channel down which the liquid metal flows. The frequency used was 14 000 c.p.s. and the amplitude 0.1 mm. Fig. 3 shows photographs of the fractures of zinc ingots (diameter 100 mm) made by continuous casting at 430°C (a - without vibration, b - with vibration). The vibration produced a much finer grain. Similar results were obtained with aluminium. The following mechanism of grain refinement is suggested. During casting, solid metal forms

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S/136/61/000/001/006/010
E021/E206

on the walls of the pouring channel. Under the action of the vibrations and the liquid metal, this is removed and results in solid fragments being present in the liquid metal poured into the mould. These become the crystallisation nuclei. The theory was tested by using a pouring channel at 650°C for aluminium. At this temperature no solid metal formed and no refinement occurred. Figs. 4a and 4b show that no change in structure occurred at this temperature when vibrations were used. If aluminium wire was fed into the pouring channel, however, grain refinement occurred (Fig. 4c). This confirmed the theory that solid fragments of metal were causing nucleation. In the continuous casting of aluminium and magnesium alloys, it is therefore necessary to use a cooled pouring arrangement to obtain grain refinement by vibrations. There are 5 figures and 8 references; 7 Soviet and 1 non-Soviet.

S/145/62/000/010/006/006
D263/D308

AUTHORS: Balandin, G.P., Candidate of Technical Sciences, Docent, Gini, E.Ch., Aspirant, Sokolov, Ye.A., Engineer, Stepanov, Yu.A., Assistant and Yakovlev, Yu.P. Aspirant

TITLE: Filling capabilities of raw sand forms in casting of aluminum alloys

PERIODICAL: Izvestiya vysshikh uchebnykh zavedeniy. Mashinostroyeniye, no. 10, 1962, 184-191

TEXT: The article describes a series of experiments, with various types of pairing systems and different methods of filling sand forms for thin-walled (2 - 2.5 mm) panel type castings, conducted in order to find the most practical solutions. Conclusions: improvements in filling capabilities can be obtained by using pouring systems having minimal thermal and hydraulic losses. Quick pouring improves filling capability but requires good ventilation. To obtain required accuracy and thickness of castings, rigging of increased

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Filling capabilities ... S/145/62/000/010/006/006
D263/D308

rigidity is necessary. High overheating (160 - 180°C above liquidus) makes it possible to obtain castings of 500 - 800 mm size with wall thickness of 1.5 mm. Filling capabilities can also be improved considerably by treating form surfaces with special coverings (chalk, amorphous carbon): this lowers the pouring temperature and consequently castings can be made using alloys whose properties are reduced at high overheatings. There are 4 figures and 2 tables.

ASSOCIATION: MVTU im. N.I. Baumana

SUBMITTED: December 8, 1961

Card 2/2

ACCESSION NR: AT4016073 S/2698/63/000/000/0275/0280

AUTHOR: Balandin, G. F.; Bini, E. Ch.; Sokolov, Ye. A.; Stepanov, Yu. A.; Yakovlev, Yu. P.

TITLE: Influence of technological factors on the mechanical properties of thin-walled castings

SOURCE: Soveshchaniye po teorii liteyny*kh protsessov. 8th, 1962. Mekhanicheskiye svoystva litogo metalla (Mechanical properties of cast metal). Trudy* soveshchaniya. Moscow, Izd-vo AN SSSR, 1963, 275-280

TOPIC TAGS: casting, casting technology, squeeze casting, thin walled casting, aircraft part, casting mechanical property, aluminum alloy, magnesium alloy, crack formation

ABSTRACT: Many aircraft parts, especially remote-controlled guidance structures, are made of large thin-walled pieces which are difficult to fabricate by rolling or pressing. These structures are now often cast, but this becomes difficult if areas of 1 x 2 m and thicknesses of only 2-2.5 mm are to be produced. The new technique of squeeze casting has proven satisfactory for thin castings and large sizes. The disadvantage of this method, however, is the formation of hot cracks while casting high-strength or high-temperature aluminum and magnesium alloys. In the casting laborary of the MVTU im.

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ACCESSION NR: AT4016073

Baumana, parts with thicknesses below 2 mm were found to have low strength although most specimens conformed to the specifications of GOST 2685-55. In analyzing some of the reasons for the difficulties, particular attention is paid to casting temperature and the thickness of the cast (see the Enclosure). The temperature gradients arising in the alloy during and after squeeze casting are also considered and held to be responsible for variations in mechanical properties. The authors did not come to any final conclusions but suggest that further tests under actual working conditions should be performed in order to find out whether these castings can be used and are actually stronger than riveted or welded structures. Orig. art. has: 3 figures and 1 table.

ASSOCIATION: MVTU im. Baumana

SUBMITTED: 00 DATE ACQ: 27Dec63 ENCL: 02

SUB CODE: MM, AS NO REF SOV: 003 OTHER: 002

Card 2/4

ACCESSION NR: AT4016074 S/2698/63/000/000/0287/0291

AUTHOR: Balandin, G. F.; Yakovlev, Yu. P.

TITLE: Effect of vibrations on the properties of cast metal

SOURCE: Soveshchaniye po teorii liteyny*kh protsessov. 8th, 1962. Mekhanicheskiye svoystva litogo metalla (Mechanical properties of cast metal). Trudy* soveshchaniya Moscow, Izd-vo AN SSSR, 1963, 287-291

TOPIC TAGS: casting, cast aluminum, cast steel, crystallization, grain size, vibration casting

ABSTRACT: Many laboratory and factory investigations have shown that the mechanical properties of castings are generally improved (hot crack formation and liquation are reduced, corrosion resistance and density are increased) when casting is performed with vibrations. In the casting laboratory of the MVTU, a procedure was developed for casting through a vibrating chute or funnel (shown in Fig. 1 of the Enclosure) at 1,000 oscillations per minute. Vibrations of both the mold and the funnel led to finer grain size because of the disintegration of the solid phase. Tests were performed with Al-Si and Al-Cu alloys of known strength near the solidus point. Alloys with higher strength near the solidus point showed less disruption under the influence of vibrations than alloys of

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ACCESSION NR: AT4016074

lower strength. Orig. art. has: 5 figures.

ASSOCIATION: MVTU im. Baumana

SUBMITTED: 00 DATE ACQ: 27Dec63 ENCL: 01

SUB CODE: MM NO REF SOV: 000 OTHER: 000

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ACCESSION NR: AT4016074

ENCLOSURE: 01

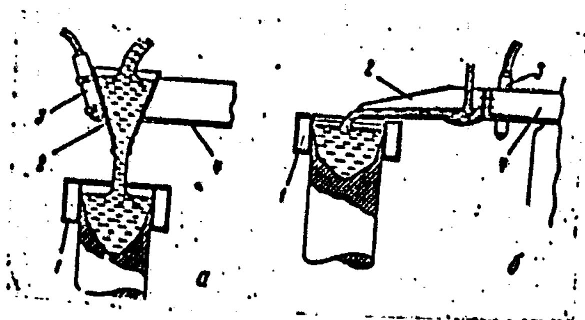

Figure 1.
Semi-continuous casting through a vibrating chute (a) and vibrating funnel (b)
1 - crystallizer; 2 - vibrating pouring device; 3 - vibrator; 4 - fastening bracket

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L 12604-63 EWT(m)/EWP(q)/BDS AFFTC/ASD JD
ACCESSION NR: AP3001693
S/0126/63/015/005/0673/0677

AUTHOR: Balandin, G. F.

53
52

TITLE: Influence of vibration upon crystal structure in castings and ingots 19

SOURCE: Fizika metallov i metallovedeniye, v. 15, no. 5, 1963, 673-677

TOPIC TAGS: vibration, crystallization, refinement of structure, impurity, overheating

ABSTRACT: The author reviewed existing theories on the influence of vibration upon crystallization of castings and ingots. He concluded that none of these theories give convincing reasons why vibration causes refining of the grain. He points out that any commercial metal or alloy includes insoluble active impurities which lose their activity in molten metal and do not affect the process of crystallization. On cooling, however, these insoluble impurities are trapped by the solid phase of metal and regain their activity. The vibration of molten metal destroys the first layer of crystals growing along walls of the mold. Fragments of these crystals include reactivated impurities which are set free after smelting. These particles of impurities have a modifying effect on crystallization. Similar conclusions were arrived at by French investigators in 1961. The article includes

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ACCESSION NR: AP3001693

photographs showing structure of aluminum melted at various temperatures and subjected to vibration for 1.5 to 2 seconds while being poured. Vibration affected the structure only in metal melted at 600C without overheating. Orig. art. has: 2 photographs.

ASSOCIATION: Moskovskoye vy*ssheye tekhnicheskoye uchilishche im. N. E. Baumana (Moscow Higher Technical Education School)

SUBMITTED: 12Jul62 DATE ACQ: 11Jul63 ENCL: 00

SUB CODE: 00 NO REF SOV: 016 OTHER: 001

Cord 2/2

ACCESSION NR: AT4017180 S/0000/63/000/000/0330/0339

AUTHOR: Balandin, G. F. (Moscow)

TITLE: Molding of sedimented casts.

SOURCE: AN BSSR. Fiz.-tekhn. institut. Teplofizika v liteynom proizvodstve (Thermal physics in the foundry industry). Minsk, 1963, 330-339

TOPIC TAGS: casting, foundry industry, sedimented cast

ABSTRACT: The latest types of castsand casting techniques are reviewed and evaluated. Various types of sedimented casting are described in detail, including those proposed by V. D. Khramov (sedimentation in a mold), A. I. Veynik (also sedimentation in a mold), V. G. Golovkin (wire casting), and A. V. Stepanov (continuous sedimentation). These processes yield thin-walled quality casts of different types. Among the peculiarities of the processes are the strictly directed partial or complete (in continuous sedimentation) solidification of the liquid metal which yields, in contrast to the usual processes, flawless, very thin casts, but calls for great caution to prevent the fine crystal structure from being damaged by the oncoming flow of the overheated metal. Technological parameter control by automation is called for to ensure smooth operations. Orig. art. has: 4 figures and 2 graphs.

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ACCESSION NR: AT4017180

ASSOCIATION: Fiz.-tekhn. institut AN BSSR (Physicotechnical Institute, AN BSSR)

SUBMITTED: 19Apr63 DATE ACQ: 06Mar64 ENCL: 00

SUB CODE: ML NO REF SOV: 009 OTHER: 000

Card 2/2

ACCESSION NR: AP4030381 S/0145/64/000/002/0160/0173

AUTHOR: Balandin, G. F. (Candidate of technical sciences, Docent); Gini, E. Ch. (Candidate of technical sciences); Matveyko, Yu. P. (Aspirant); Sokolov, Ye. A. (Engineer); Stepanov, Yu. A. (Candidate of technical sciences, Docent); Yakovlov, Yu. P. (Aspirant)

TITLE: The role of technological factors in producing strength in thin walled castings

SOURCE: IVUZ. Mashinostroyeniye, no. 2, 1964, 160-173

TOPIC TAGS: mechanical property, thin walled casting, aluminum, magnesium alloy, mold, microstructure, nonuniform porosity, hardening process, hexacholroethane, acetyline

ABSTRACT: The mechanical properties of large-scale thin-walled castings used as panels were investigated at the MVTU foundry. Sample panels, 370 mm by 35 mm and 4 to 1.5 mm in thickness, were cast from various aluminum and magnesium alloys (e.g. AL2, AL4, AS15, ML15, etc.). Before pouring the material, the mold was covered by hexachloroethane (C_2Cl_6) for aluminum alloys and with acetylene carbon black for the ML15 alloy. The aluminum alloy specimens had a strength within the GOST 2685-55 standard.

ACCESSION NR: AP4030381

Lowering the specimen thickness to below 2 mm revealed a definite reduction in mechnical properties of the cast. The microstructure of the panels showed no observable effects caused by minimum or maximum superheat conditions. However, there was a noticeagle increase in nonuniform porosity for very thin-walled specimens cast from V15 and AL19 alloys. There was considerable scatter in the measured strength of various specimens, caused primarily by a nonuniform temperature distribution in the casting during the pouring of the alloy in the mold. It is shown that the melt temperature distribution in the mold, the method of pouring the melt in the mold, and the method of feeding the alloy during the hardedning process are significant factors contributing to the nonuniformity between specimens and within the given specimen itself. A detailed comparison is made between casting in sandstone molds and a pressing-out methos to enhance uniform temperature distributions in the molten alloy. In general, the two methods yield similar data scatter in the strength of the casting. Orig. art. has: 7 figures

ASSOCIATION: none

SUBMITTED: 04Mar63

SUB CODE: MM

NO REF SOV: 022

ENCL: 00

OTHER: 010

Card 2/2

APPROVED FOR RELEASE: Wednesday, June 21, 2000 CIA-RDP86-00513R00010:

ACCESSION NR: AT4017182 S/0000/63/000/000/0364/0370

AUTHOR: Balandin, G. F. (Moscow); Yakovlev, Yu. P. (Moscow)

TITLE: The action of vibration on metals during crystallization

SOURCE: AN BSSR. Fiz.-tekhn. institut. Teplofizika v liteynom proizvodstve (Thermal physics in the foundry industry). Minsk, 1963, 364-370

TOPIC TAGS: metal crystallization, crystallization, vibration

ABSTRACT: Experience with vibration during casting shows that it is possible to eliminate or decrease defects in castings, specifically macro-chemical and structural heterogeneity, porosity, and cracks. Under the prolonged action of vibration on the melt (in a vibrating mold), rapid cooling of the overheated melt is observed. This may be explained by the intensive melting of the hard crust on the surface. It is noted that the action of vibration on the melt during crystallization can also be produced by other types of external influences (ultrasonic treatments of melts for casting and welding, periodic variation of speed for centrifugal casting, pouring of large castings through a cooled shaft, and induction mixing of the melt during continuous casting). Orig. art. has: 3 figures.

Card 1/2

ACCESSION NR: AT4017182

ASSOCIATION: Fiz.-tekhn. institut, AN BSSR. (Institute of Physics and Technology, AN BSSR)

SUBMITTED: 19Apr63 DATE ACQ: 06Mar64 ENCL: 00

SUB CODE: MM NO REF SOV: 014 OTHER: 000